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Abstracts**

## **Sport and Exercise Psychology\***

### **The role of self-efficacy in reducing sedentary behavior: Implications for interventions**

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Sedentary behavior (SB) is emerging as an independent risk factor for cardiovascular disease and type 2 diabetes (Katzmarzyk, 2010, Owen, et al., 2010), and as a target for physical activity and health promotion interventions. This study examined effects of an intervention based in Social Cognitive Theory to increase self-efficacy (SE) for reducing SB and increasing physical activity (PA). Women (mean age = 58.5 ± 12.5 years) from seven weight loss support clubs were enrolled in a 6-week intervention ( $n = 40$ ) or wait-listed ( $n = 24$ ) based on club randomization. The intervention, delivered via group sessions and email, used mastery feedback to reduce SB and increase steps. PA and SB were measured by accelerometers and self-report pre-post. SE (to reduce SB, to increase light and moderate PA) was measured pre, mid, and post. Repeated-measures MANOVA found no significant change over time or group  $\times$  time interaction for behavior. The multivariate group and interaction effects for SE were non-significant, but a trend for time ( $p = .056$ ) was noted. All three SE measures decreased from baseline to mid and rebounded at post, but the patterns varied. Univariate tests for SE to reduce SB, the main target variable, were significant for time ( $F = 3.34, p < .05$ ) and the group  $\times$  time interaction approached significance. SE decreased at mid-point, but increased at post for the intervention group while the WC group continued to fall. SE for LPA and MPA patterns were similar for both groups. Participant ratings and open-ended survey responses point to limited use of behavioral cues and modeling, and to environmental influences on participants' sedentary behavior. Barriers to self-monitoring SB included recall, routine, and time. Participants were receptive to monitoring PA via pedometer and rated step-counting as the most effective aspect of the intervention. The role of SE in changing SB needs further study. Interventions aimed at reducing SB should focus on behaviors that are easily monitored, such as steps, and should consider modifying the built environment as a way to build mastery.

### **The relationship between perfectionism and exercise dependence in regular exerciser: A mediating effect of self-determined motivation**

Albert, Donald D.; Lu, Frank; National Taiwan Sport University

Increased attention has been paid to the idea that exercise can become a compulsive behavior, with suggestions that its use can become addictive based on the reasons for participation. It has been stressed that studying the correlates of exercise dependence is important because of its negative psychological and physical effects. Perfectionism, as indicated by previous

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\*The abstracts are alphabetically arranged by the first author's surname within each of the three sections—Motor Learning and Control, Developmental Perspectives: Motor Control/Coordination/Rehabilitation, and Sport and Exercise Psychology.



### **A cross-cultural validation of Middleton's Mental Toughness Inventory**

Lo, Wen-Chieh; Lu, Frank J. H.; Wang, Erica T. W.; National Taiwan Sport University

The purpose of this study was to validate Middleton and colleagues (Middleton, Marsh, Martin, & Richards, 2004) Mental Toughness Inventory (MTI) into Chinese version. Middleton and colleagues defined mental toughness as an unshakeable perseverance and conviction towards some goals despite pressure or adversity. Middleton et al. (2004) and conceptualized mental toughness with 12 components including: self-efficacy, potential, mental self-concept, task familiarity, value, personal bests, goal commitment, perseverance, task focus, positivity, stress minimization, and positive comparisons. In this study, we used back-translation making a Chinese MTI draft and administered to 302 Taiwanese intercollegiate athletes (males = 191; females = 111;  $M_{\text{age}} = 19.67$ ,  $SD = +1.51$ ). With item discrimination analysis exploratory factor analysis (EFA), and Cronbach alpha coefficients analyses, we found Chinese version of MTI emerged 5 factors named "do one's best attitude," "strong self-belief," "positive comparisons," "resilient under stress" and "positive values and beliefs toward sports", and Cronbach's alpha ranging from .87 to .92 with total accounted variance is 72.87%. We suggested that future study may validate Chinese MTI with confirmatory factor analysis (CFA) or other related research.

### **Motivational climate, self-determined motivation and competitive anxiety in Pan American gymnasts**

Lopez-Walle, Jeanette; Pineda, Antonio; Tristan, Jose; Universidad Autónoma de Nuevo Leon; Balaguer, Isabel, Universitat de València

The antecedents of anxiety in sports have been studied extensively, the evidence suggests that personal, environmental, and team factors may represent a source of anxiety in athletes (Woodman & Hardy, 2001). The purpose of this study was to analyze from the perspective of Achievement Goals Theory (Ames 1992; Nicholls, 1989) and Self-determination Theory (Deci & Ryan, 1985; Ryan & Deci, 2000), the interrelationship between the dimensions of perceived motivational climate, self-determined motivation and competitive anxiety (somatic, and cognitive anxiety and self-confidence). A multi-section questionnaire was administered to 60 artistic gymnasts, men and women, ( $M_{\text{age}} = 20.84$ ,  $SD = 3.82$ ) who participated in the 2011 Pan American Games in Mexico, who completed the Spanish versions of the following questionnaires: The Perceived Motivational Climate in Sport Questionnaire (Newton et al., 2000; Balaguer et al., 1997), the Sport Motivation Scale (Pelletier et al., 1995; Núñez et al., 2007) and the Revised Competitive State Anxiety Inventory-2 (Cox et al., 2003; Andrade et al., 2007). The results confirmed the theoretical factors for each of the questionnaires, and offered an adequate reliability ( $\alpha = .70$  to  $.89$ ). Regression analysis indicated that the perceived task involving motivational climate was a positive predictor of self-determined motivation ( $\beta = .30$ ,  $p < 0.031$ ), and this in turn negatively predicted somatic anxiety ( $\beta = -.293$ ,  $p < .05$ ) and positively predicted self-confidence ( $\beta = .536$ ,  $p < .01$ ). Results revealed no direct links between motivational climate and any factor of competitive anxiety. These results support the importance of creating environments that promote self-determined motivation, which in turn could be contributing in some degree to the perception of low competitive anxiety.

### **Prediction of adolescents' participation in physical activities: The roles of peer norm and self-efficacy**

Lu, Frank J. H.; Wang, Erica T. W.; Wu, Chi-Hung, National Taiwan Sport University

Although many studies suggest that self-efficacy is the strongest predictor of physical activity in most population (Sallis & Owen, 1999; Trost, Owen, & Bauman, 2002), some researchers suggest that peer norms may be influential in predicting healthy behavior (Ajzen & Fishbein, 1979; Berndt, 1979). In line with such arguments, the purpose of this study was to examine how adolescents' self-efficacy and peer norm predict leisure time physical activity. Also, we intended to examine whether self-efficacy mediates the relationships of peer norm and physical activity. Two hundred and forty junior high school students (Male = 124; Female = 116;  $M_{age} = 15.29$ ,  $SD = \pm .57$ ) completed International Physical Activity Questionnaire (IPAQ), Perceived Self-Efficacy Scale in Physical Activity (Wu, Pender, & Nouredine, 2003) and The Modeling of Physical Activity Scale (Wu, Pender, & Nouredine, 2003). Hierarchical regression analysis found although social norm accounted greater variance in adolescents' physical activity ( $R^2 = .10$ ) than self-efficacy ( $R^2 = .04$ ), self-efficacy fully mediated the relationship between peer norm and physical activity. Results suggested that when initiating an exercise program for adolescents health practitioners should not ignore the influence of self-efficacy and peer norm on adolescents' physical activity participation.

### **The role of high school physical activity mode on college students' motivation for physical activity**

Madonia, Joe; Cox, Anne E.; Illinois State University

The transition from high school to college presents new challenges that may impact health behaviors including physical activity (Racette et al., 2005). However, the role of past physical activity experience in predicting whether physical activity behaviors will be maintained, increase or decrease across the transition to college has received little research attention. Self-determination theory (SDT) proposes that physical activity behaviors are more likely to be sustained if the underlying motivation regulating the behavior is more self-determined in nature (Ryan & Deci, 2007). Furthermore, feelings of competence and autonomy have been shown to be central to supporting more self-determined motivation (e.g., Wilson & Rogers, 2008). The purpose of this study was to test the role of physical activity mode during high school in predicting the degree to which students feel competent and autonomous with regard to physical activity during college and thus more self-determined in their motivation. First year college students ( $N = 124$ ;  $M_{age} = 18.42$ ,  $SD = .51$ ) completed a survey assessing the amount of time they spent engaged in different modes of physical activity during their senior year of high school (retrospectively), and feelings of competence, autonomy and motivation regulations for physical activity presently in college. Physical activity mode included competitive sport, recreational sport, aerobic exercise, resistance exercise, organized activities and recreational activities. Path analysis results showed that participation in competitive sport and resistance training positively predicted ( $p < .01$ ) feelings of competence ( $R^2 = .31$ ) and competitive sport participation positively predicted autonomy ( $R^2 = .13$ ). In addition, perceived competence and autonomy mediated the relationships of competitive sport participation and resistance training to self-determined motivation ( $R^2 = .28$ ). Results suggest that prior experience in these types of physical activity is important for future participation due to their role in supporting more self-determined motivation.

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